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REMARKSClaim Objections

Claims 9 and 13 are objected to because the terms "fiberglass" and naphthenic" are misspelled.

Claims 9 and 13 are now amended by correcting the misspelled terms.

Claims Rejections – 35 U.S.C. §102

Claims 1, 3, 11 and 12 are rejected under 35 U.S.C. §102(b) as being anticipated by Cooper et al., GB2,165,564A.

For ease of comparison, the gist of the present invention will be stated herein prior to discussing the teachings of the Cooper et al. patent.

The composite membrane of the present invention comprises the following seven layers:

- 1) A first layer, or surface foil, of aluminum which renders high reflective properties against sun rays (alternative surface foils include copper foil and polyethylene or polypropylene films);
- 2) An adhesive layer that bonds the first layer to a third layer;
- 3) A third layer consisting of a polyolefin film or a high density polyolefin film bonded to the first layer by the adhesive layer;
- 4) A fourth layer of a waterproof asphalt-based adhesive that bonds the third layer to a fifth layer;
- 5) A fifth layer of a multi-layer polyester substrate or reinforcing mat that is bonded to the fourth layer (alternative substrates include fiberglass, organic papers and hybrids thereof);

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- 6) A sixth layer of a waterproof asphalt-based adhesive that bonds with the fifth layer on the top surface thereof and with a substrate (such as a roof surface) on the bottom surface thereof;
- 7) A seventh layer of a release film to prevent adhesion of the product in its rolled-up configuration and during the installment process.

It is to be noted that while the seventh layer does not constitute a layer of the final product, without it, rolling and handling the product both during transport to the site of installation and during the installment process would render the final product less advantageous.

The Cooper et al. reference teaches a self-adhesive sheet comprising several embodiments.

In one embodiment, which is the main embodiment claimed in the reference, the self-adhesive sheet comprises:

- a) a pressure-sensitive adhesive and waterproofing layer of a bituminous compound,
- b) an apertured sheet or core layer adhered to one face of the waterproofing layer, wherein the apertures cover 10-50% of the area of the sheet, and wherein the apertured sheet is being substantially impervious to the bituminous compound except where there is an aperture; and
- c) a removable facing sheet or release sheet covering the other face of the adhesive, waterproofing layer.

The apertured sheet, or core layer, may be a polymeric film, such as polyethylene, polypropylene, polyvinyl chloride, polyester, or may be a woven or non-woven glass fiber or polyester fabric.

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The reason for providing 10-50% apertured surface area in the total surface areas of the aperture sheet, or core layer, is to allow water vapor to escape laterally from under the self-adhesive sheet.

Comparing the claims of the present invention to the main embodiment in the reference, the following can be observed as shown in Table I.

TABLE I

| Present Invention as Claimed | | Reference - Teaching, Main Embodiment |
|---|---|---|
| 1) First layer or surface foil of aluminum, copper, polyethylene or polypropylene | ≠ | 1) No such layer or surface foil |
| 2) Adhesive layer to bond the first layer to the third layer | ≠ | 2) No such adhesive layer |
| 3) Third layer consisting of a polyolefin film or a high density polyolefin film bonded to the first layer | ≠ | 3) No such layer or film |
| 4) Fourth layer of waterproof asphalt-based adhesive that bonds the third layer to the fifth layer | = | 4) Pressure-sensitive adhesive and waterproofing layer of a bituminous compound |
| 5) Multi-layer (fifth layer) polyester substrate or reinforcing mat bonded to the fourth layer. The mat is solid, continuous without apertures therein. | ≠ | 5) Core layer having 10-50% apertures therein |
| 6) Sixth layer-waterproof asphalt-based adhesive that bonds with the fifth layer | ≠ | 6) No such layer |
| 7) Seventh layer is a release sheet or film | = | 7) Facing sheet or release sheet |

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As shown in Table I, the present invention is not identically disclosed or described as set forth in 35 U.S.C. §102 since only two of the layers used in the reference can be equated with the seven layers claimed in the present invention.

In the following remarks the reference disclosure will be discussed as it broadly encompasses all the embodiments.

The self-adhesive sheet of the reference may further comprise the following

a) Page 1, lines 74-77: "The sheet may consist of a single layer of pressure-sensitive adhesive and waterproofing bituminous compound, or two such layers separated by a core layer".

b) Page 2, lines 121-129: "A final waterproofing sheet is applied as the top layer of the roof. This may be environmentally stable and protective waterproofing sheet, and bitumen laminates or impregnated felts of known type may be considered if they demonstrate adequate properties. The final sheet may incorporate a solar-reflective upper surface, such as aluminum foil or mineral chippings, or such a surface may be applied after the final sheet is laid".

Referring to a) above, the use of the pressure-sensitive adhesive and waterproofing bituminous compound layer has been discussed in Table I. The use of the "two layers separated by a core layer" will be discussed in Table II in relation to the present invention.

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TABLE II

| Present Invention as Claimed | | Reference - Broad Teaching |
|---|---|---|
| 1) First layer or surface foil of aluminum, copper, polyethylene or polypropylene | ≠ | 1) No such layer or surface foil |
| 2) Adhesive layer to bond the first layer to the third layer | ≠ | 2) No such adhesive layer |
| 3) Third layer consisting of a polyolefin film or a high density polyolefin film bonded to the first layer | ≠ | 3) No such layer or film |
| 4) Fourth layer of waterproof asphalt-based adhesive that bonds the third layer to the fifth layer | = | 4) Pressure-sensitive adhesive and waterproofing layer of a bituminous compound |
| 5) Multi-layer (fifth layer) polyester substrate or reinforcing mat bonded to the fourth layer. The mat is solid, continuous without apertures therein. | ≠ | 5) Core layer having 10-50% apertures therein |
| 6) Sixth layer-waterproof asphalt-based adhesive that bonds with the fifth layer | ≠ | 6) No such layer |
| 7) Seventh layer is a release sheet or film | = | 7) Facing sheet or release sheet |
| 8) No such layer | ≠ | 8) Pressure-sensitive adhesive and waterproofing layer of a bituminous compound |
| 9) No such layer | ≠ | 9) Core layer having 10-50% apertures therein |

NOTE: The facing sheet or release sheet should be removed, supposedly prior to step 8, and another facing sheet or release sheet placed on the core layer in step 9.

As can be seen, there are now two layers of pressure-sensitive adhesive and waterproofing layers and two core layers with apertures in the reference products.

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Accordingly, the number of layers and their order do not match with that of the present invention.

Referring to b), the reference teaches aluminum foil which is also used by applicants. While the expression "may be applied" is not sufficiently specific as to how the aluminum foil is attached to the self-adhesive sheet, applicants suppose that it is somehow adequately attached or adhered to the self-adhesive sheet. Accordingly, Table I and Table II are modified in which the first layer in the reference teaching will consist of a surface layer which may be equated with applicant's first layer. The modification is shown in Table III and Table IV.

TABLE III

| Present Invention as Claimed | | Reference – Broad Teaching, Final Roofing, Main Embodiment |
|---|---|---|
| 1) First layer or surface foil of aluminum, copper, polyethylene or polypropylene | = | 1) Surface foil |
| 2) Adhesive layer to bond the first layer to the third layer | ≠ | 2) No such adhesive layer |
| 3) Third layer consisting of a polyolefin film or a high density polyolefin film bonded to the first layer | ≠ | 3) No such layer or film |
| 4) Fourth layer of waterproof asphalt-based adhesive that bonds the third layer to the fifth layer | = | 4) Pressure-sensitive adhesive and waterproofing layer of a bituminous compound |
| 5) Multi-layer (fifth layer) polyester substrate or reinforcing mat bonded to the fourth layer. The mat is solid, continuous without apertures therein. | ≠ | 5) Core layer having 10-50% apertures therein |

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TABLE III (contd.)

| Present Invention as Claimed | | Reference - Broad Teaching, Final Roofing, Main Embodiment |
|--|---|---|
| 6) Sixth layer-waterproof asphalt-based adhesive that bonds with the fifth layer | ≠ | 6) No such layer |
| 7) Seventh layer is a release sheet or film | = | 7) Facing sheet or release sheet |

TABLE IV

| Present Invention as Claimed | | Reference - Broad Teaching, Final Roofing |
|---|---|---|
| 1) First layer or surface foil of aluminum, copper, polyethylene or polypropylene | = | 1) Surface foil |
| 2) Adhesive layer to bond the first layer to the third layer | ≠ | 2) No such adhesive layer |
| 3) Third layer consisting of a polyolefin film or a high density polyolefin film bonded to the first layer | ≠ | 3) No such layer or film |
| 4) Fourth layer of waterproof asphalt-based adhesive that bonds the third layer to the fifth layer | = | 4) Pressure-sensitive adhesive and waterproofing layer of a bituminous compound |
| 5) Multi-layer (fifth layer) polyester substrate or reinforcing mat bonded to the fourth layer. The mat is solid, continuous without apertures therein. | ≠ | 5) Core layer having 10-50% apertures therein |
| 6) Sixth layer-waterproof asphalt-based adhesive that bonds with the fifth layer | ≠ | 6) No such layer |
| 7) Seventh layer is a release sheet or film | = | 7) Facing sheet or release sheet |

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TABLE IV (contd.)

| Present Invention as Claimed | | Reference - Teaching, Final Roofing |
|-------------------------------------|---|---|
| 8) No such layer | ≠ | 8) Pressure-sensitive adhesive and waterproofing layer of a bituminous compound |
| 9) No such layer | ≠ | 9) Core layer having 10-50% apertures therein |

NOTE: The facing sheet or release sheet should be removed, supposedly prior to step 8, and another facing sheet or release sheet placed on the core layer in step 9

As can be seen from the analysis, the Cooper et al. reference in all the embodiments and teachings does not anticipate the present invention. Withdrawal of the rejection of the claims under 35 U.S.C. §102(b) is respectfully requested.

Claim Rejections - 35 U.S.C. §103

Claims 2, 9 and 10 are rejected under 35 U.S.C. §103(a) as being unpatentable over Cooper et al. (GB 2,165,564A).

As to claims 2 and 9, the Examiner alleges that Cooper et al. teach the same invention as applicants except they fail to teach that the surface layer has a thickness of 0.5 to 3.0 mils, and the reinforcing mat has a basis weight of about 20 g/m² to 120 g/m². Considering that pliability relates to thickness and basis weight, the Examiner holds that it would have been obvious to optimize these characteristics to provide sufficient strength and flexibility in the final product.

As to claim 10, the Examiner holds that Cooper teaches an apertured mat or reinforcing mat which can be a polyester film (polyethylene terephthalate).

Applicants respectfully disagree with this holding for the following reasons.

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In a rejection under 35 U.S.C. §103, it is fundamental that all elements recited in a claim must be considered and given effect in judging the patentability of that claim against the prior art. See In re Geerdes, 491 F.2d 1260, 1262-63, 180 USPQ 789, 791 (CCPA 1974). Claims 2, 9 and 10 are dependent claims of generic claim 1, further limiting claim 1 by some particular characteristics. Claims 2, 9 and 10, accordingly, must be considered with claim 1, and not by themselves individually. Claim 1 has been discussed above in connection with the rejection under 35 U.S.C. §102, establishing that Cooper et al. do not teach the same invention. In particular, it was pointed out that the reference teaches a reinforcing mat with apertures therein which applicants do not have or claim. The use of the aperture reinforcing mat is taught to allow water vapor to pass through the deck and allow it to pass laterally. Both the structure of the apertured mat and the purpose of its use are different from the reinforcing mat and the purpose of its use in the present invention. As is well-known, in order to equate a prior art teaching with the claims of an application, either the structure of the prior art or the object to achieve thereby must be the same. In the present case both the structures and the object are different, i.e. not equitable.

Withdrawal of the rejection of claims 2, 9 and 10 under 35 U.S.C. §103 is respectfully requested.

Claims 4-6 are rejected under 35 U.S.C. §103(a) as allegedly being unpatentable over Cooper et al. in view of Stierli (U.S. Patent No. 4,442,148).

Stierli discloses a three layer waterproofing laminate: a) a self-adhesive oil containing thick bituminous layer 1; (b) a thin support sheet of a polyethylene film covering a surface of the bituminous layer 3; and c) an oil impermeable polymeric barrier.

The oil impermeable polymeric barrier can be polyvinyl acetate, polyvinyl chloride, polyacrylamide, casein, alpha protein, zein, cellulose polymers such as hydroxypropyl methyl cellulose, and neoprene rubber. [Column 4, lines 9-13]

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Applicants in claims 4-6 do not claim such oil impermeable polymeric barrier, and do not claim the listed polymeric barrier.

As to the thin support sheet of the reference, the reference does not teach or suggest the six layer combination (the seventh layer is a release sheet) of the present invention. A case of obviousness is established by showing that some objective teachings or suggestions in the applied prior art taken as a whole and/or knowledge generally available to one of ordinary skill in the art would have led that person to the claimed invention, including each and every limitation of the claims, without recourse to the teachings in appellants' disclosure. See generally In re. Oetiker, 977 F.2d 1443 at 1447-48, 24 USPQ2d 1443 at 1446-47. The prior art as applied must be such that it would have provided one of ordinary skill in the art with both a suggestion to carry out appellants' claimed invention and a reasonable expectation of success in doing so. See In re Dow Chemical Co., 837 F.2d 469, 473, 5 USPQ2d 1529, 1531 (Fed. Cir. 1988). "Both the suggestion and the expectation of success must be founded in the prior art, not in the applicant's disclosure". *Id.*

For the above-stated reasons, withdrawal of the rejection of claims 4-6 under 35 U.S.C. §103(a) over Cooper et al. in view of Stierli is respectfully requested.

Claims 7, 8 and 13-15 are rejected under 35 U.S.C. §103(a) as being unpatentable over Cooper et al. in view of Walther et al. (U.S. Patent No. 6,319,969).

Walther et al. is directed to interpolymer compositions for use in sound management. Additionally, the compositions can also be used in the manufacture of fibers, foams, and lattices, as well as adhesives and sealant formulations.

The Office Action suggests using the Walther et al. composition as the adhesive in the composite of Cooper et al. The Office Action, in support of the proposition that

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such replacement involves only routine skill in the art, cites In re. Boesch, 617 F.2d 272, 205 USPQ 215 (CCPA 1980).

Applicants respectfully submit that such substitution/replacement is not suggested by the Walther et al. reference. It is the Examiner suggesting such substitution/replacement. Reviewing courts have repeatedly cautioned against employing hindsight by using the applicant's disclosure as a blueprint to reconstruct the claimed invention from the isolated teachings of the prior art. See, e.g., Grain Processing Corp, v. American Maize-Products Co., 840 F.2d 902-907, 5 USPQ2d 1788, 1792 (Fed. Cir. 1988). From Applicants' perspective, the Examiner's rejection appears to be premised on impermeable hindsight reasoning.

Regarding In re. Boesch cited by the Examiner, applicants respectfully submit the following.

The case involved the patentability of a nickel based alloy consisting of eight metal components. Two prior art patents taught nickel-based alloys consisting of the same metals. The compositional limits of alloys in the reference essentially overlapped those claimed in Boesch. The elements in Boesch's alloy are balanced to provide an Nsubv (average electron vacancy concentration per atom in the matrix of the alloy) value not in excess of about 2.35. Boesch tested only one example of his single alloy within the broad range claimed. The Board found this not sufficient to support unexpectedness. In addition, Boesch was aware of an article ("Pauling's theory) which expressly suggested the kind of experimentation necessary to achieve the claimed composition. This express suggestion prompted the Board to hold that discovery of an optimum value of a result effective variable in a known process is ordinarily within the skill of the art.

In the instant case the facts are different from those of the In re. Boesch case. The instant case claimed six layers (not counting the seventh layer which is a release film) of a composite membrane.

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One of the layers is the asphalt-based adhesive layer. Substituting the Walther et al. asphalt-based adhesive in the Cooper et al. construction does not produce applicants' claimed invention.

For the above-stated reasons, withdrawal of the rejection of claims 7, 8 and 13-15 under 35 U.S.C. §103(a) as being unpatentable over Cooper et al. in view of Walther et al. is respectfully requested.

Respectfully submitted,

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